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Impact of board characteristics on IPO valuation

Evidence from Finland and Sweden

Master's Thesis

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Abstract

The purpose of this thesis is to provide insights on how the characteristics of board affect valuation of entities offering an initial public offer. The agency theory portrays that the interests of company management and investors are in conflict by nature. Development of corporate governance has been proposed as a one of the most effective methods to certify the quality of the financial reporting and create trust in the market. As a company implements an effective corporate governance model it can be assumed that the trust towards the quality of financial reporting is improved among the market participants and the required rate of return decreases.

This study examines the impact of board characteristics on the valuation of Initial Public Offerings in Finland and Sweden during 2012-2015. This is especially interesting period as the IPO market has been very active during past years and therefore there is a broad sample of stock listings that will be examined in this study. Further, this study examines differences between the Regulated Market (Nasdaq Exchanges) and the less strict First North market place (Multilateral Trading Facility). This will provide comparison of characteristics of companies listing in the two market places. This comparison has not been studied at large in the academia before, as the Nasdaq Fist North is relatively young market place established in Sweden in 2006 and expanded to Finland the following year.

The study was conducted by performing an OLS regression, correlation analysis and descriptive statistics. The results of the study show that the structure of boards is relatively consistent across the sample and variance among the firm observations is small. However, we can see differences in the board characteristics especially when comparing IPOs between the Main market and First North listings. Firms listed in the main market have larger boards, higher rate of independent board members, and more equal gender representation. Also, we can identify gradual movements in the structures of boards when analysing the trends in time series noting increase in independent members in First North listing while gender representation has increased in Main market listings. Meanwhile, in our regression analysis the only board characteristic that we found to have significant correlation with IPO valuation was board size.

Keywords Corporate governance, Board, Diversity, Valuation, IPO, Finland, Sweden

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1. INTRODUCTION

1.1 Background and motivation

In the modern financial markets, the ownership of companies is often separated from the management of the business and the shareholder base is dispersed broadly. This set up creates information asymmetries between the owners of the capital and the management who oversee the business. The conflict of interest between management and investors is generally called as agency problem made famous by Jensen and Meckling (1976).

Therefore, there has become a great need to improve and develop the governance of firms to build up trust among firms and the investors in the capital market. This ensures efficient allocation of capital in the financial markets and prevents misappropriation of the capital within the firms, thus, contributing to the accountability of management towards the investors (e.g. Shleifer and Vishny 1997). Thus, it is in the interests of the society to enhance solutions to mitigate the information asymmetries and to facilitate the effective allocation of capital between firms and investors. Generally, mechanisms to increase the trust in the financial markets include financial reporting regulation, auditors and information intermediaries, and corporate governance structures (Healy et al. 2001).

The public scrutiny over these governance mechanisms has increased due to the financial crises taken place during the second millennium. (Adams et al. 2010). Regulation provides rules for shareholder protection and equality, expropriation of assets by management etc. that build trust in the society and thus can lower the risk premium required by investors (Shleifer and Vishny 1997). Enhanced quality of financial information reporting supports the equity value of a firm through lower estimation risk by investors, better financial information available to investors to select investments and assess management performance, and improved liquidity as more investors are willing to participate in the market Bushman et al. (2001).

A key solution to improve the trust and efficient functioning of the financial markets has become corporate governance. The focus on corporate governance and development on the principles is driven both by legislation such as requirements in Finnish corporate law or Sarbanes-Oxley Act in the US as well as principles and recommendations implemented by the industry on a voluntary basis.

Boards have been elevated to the center of focus in the regulation reforms and academic research (Adams et al. 2010). The role of board is to represent the interests of the investors and monitor the actions of management reducing the information gap between the agent and principle (e.g. Fama & Jensen 1983, Hermalin et al. 2003). Board's role as a mechanism to monitor the top management has been studied widely in the past research and is typically summarized in two key tasks: hiring, firing, and assessment of management, and setting strategy (Adams et al. 2010).

However, the impact of board structure on valuation of firms offering IPO has not been covered in the past literature especially in Finland. This is an interesting topic as companies planning to make IPO are likely to assess its governance structures and optimize the structure to attract maximum value for the shares from marketplace. This may be different situation compared to an established company which has dispersed shareholder base and is not looking for funding at a similar scale. Further, this study examines differences between the between the Regulated Market (Nasdaq Exchanges) and the less strict First North market place (Multilateral Trading Facility). This will provide comparison of characteristics of companies listing in the two marketplaces, which has not been subject to past studies.

1.2 The objective and scope of the research

The purpose of this thesis is to provide insights on how the characteristics of board affect valuation of entities offering an initial public offer. The agency theory portrays that the interests of company management and investors are in conflict by nature, which establishes distrust between the principal and the agent. Development of corporate governance has been proposed as a one of the most effective methods to certify the quality of the financial

reporting and create trust in the market. As a company implements an effective corporate governance model, it can be assumed that the trust towards the quality of financial reporting is improved among the market participants and the required rate of return decreases.

This study examines the impact of board characteristics on the pricing of Initial Public Offerings in Finland and Sweden during 2012-2015. By taking the two Nordic countries into the scope of the study we will have broad overview of the IPOs in the Nordics. This is especially interesting period as the IPO market has been very active during past years and therefore there is a broad sample of stock listings that will be examined in this study. Further, this study examines differences between the Nasdaq Main market (Regulated market) and the less strict First North market place (Multilateral Trading Facility). This will provide comparison of characteristics of companies listing in the two market places. This comparison has not been studied at large in the academia before, as the Nasdaq Fist North is relatively young market place. First North was established in Sweden in 2006 and expanded to Finland the following year.

Additionally, this study provides descriptive statistics over differences in IPOs between Finland and Sweden. While both of the countries are Nordic and share common characteristics in the corporate governance models, the capital markets and economies have differences in terms of the width and maturity of the equity and stock markets. Sweden has more versatile and larger market cap in public companies compared to Finland. This can be expected to impact the valuations and the set up of boards in the listing companies. Additionally, this study examines the differences between the between the Regulated Market (Nasdaq Exchanges) and the less strict Multilateral Trading Facility marketplace (First North).

In the study, we examine the board characteristics in terms of board size, independent members, CEO-chairman duality, and gender distribution as these have been considered in the past literature as factors of board efficiency contributing firm performance and valuation by investors.

1.3 Research design

This study examines the impact of board characteristics on the pricing of Initial Public Offerings in Finland and Sweden during 2012-2015. The research is conducted based on data from Nasdaq, Orbis database, and prospectuses published by the companies during the IPO process.

The first goal of this paper is examine the differences in board characteristics between Nasdaq and the First North markets in Finland and Sweden. We will examine the differences and similarities of the boards through descriptive statistics. With this method we can observe the harmonization of board set ups between the two market places as well as the two Nordic countries.

The second goal of this paper is to evaluate the impact of the board characteristics on the valuations of companies offering new IPOs. We will compare the IPO valuations relative to the board characteristics by using an OLS regression model. We will use Tobin's Q (market price / book value) to determine the relative market valuation of the IPOs. Tobin's Q has been used to measure the IPO valuations in the past (e.g. Welbourne et al. 1996). Additionally, we will include in the regression control variables to account for the external factors influencing the valuations.

1.4 The structure of the study

This paper is structured as follows. The second chapter includes an introduction to corporate governance research as well as specifically board's role in mitigating the agency and information asymmetry problems between management and investors. The literature review will cover key board characteristics driving board effectiveness. Based on the past literature we will present our hypotheses over the relationship between board characteristics and IPO valuation in the third chapter. In the fourth chapter, we will present the data and methodology to perform the empirical study. In the fifth chapter, we will present the findings of the empirical model analyze the results. In the sixth chapter, we will

discuss the results and possible limitation of the study. In the final chapter of the study we will conclude the study by summarizing the results and reflecting considerations on potential future research.

2. BOARD AND CORPORATE GOVERNANCE

2.1 Information asymmetries in the capital markets

In the modern financial markets, the ownership of companies is often separated from the management of the business and the shareholder base is dispersed broadly. The shareholders do not have visibility into the daily actions of the managing directors who are responsible for running the business and allocating the assets efficiently. This set up creates information asymmetries between the owners of the capital and the management who are in charge of the business. Therefore, there has become a great need to improve and develop the governance of firms to build up trust among the firms and the investors in the capital market. This ensures efficient allocation of capital in the financial markets and prevents misappropriation of the capital within the firms, thus, contributing to the accountability of management towards the investors.

The "lemons" problem, as presented famously by Akerlof (1970), arises from the information differences and conflicting incentives between the sellers and buyers. In his paper, Akerlof, argues that entrepreneurs and investors are rational and take advantage of the information available to them. For example, if an entrepreneur is looking for an investment in his business idea they will claim the idea to be good regardless if the idea is actually bad or good in order to maximize their gain. If the investors are not able to validate which ideas are actually good and which not they will make the investment based on the average level. Thus the bad ideas receives more and good ideas less than they should making the markets less efficient and at worst destructing the marketplace. This conflict of interest has generally been accepted as an underpinning element in the relationship between management and investors in the capital markets (e.g. Shleifer and Vishny 1997). Thus, it is in the interests of the society to enhance solutions to mitigate the information asymmetries and to enhance the effective allocation of capital between firms and investors.

In the past research, there has been a number of studies to solve the information asymmetries between investors and firms (see Healy et al. 2001). Suggestions to solve the issue include optimal contracts between management and investors with incentives for full

disclose transparency of the firm financial information. Another solution of the information asymmetry is regulation that commands management for information sharing. Additionally, intermediaries, such as analysts and rating agencies, provide analysis of firm performance and narrow the gap between management and investors.

2.1.1 Agency theory

The implications of information asymmetry in the capital markets links directly to the principle-agent problem that is a dominant theory in the past literature. The theory tries to explain the relationship between management (agent) and investors (principle). The relationship between management and investors has become of significant interest in the past research since the ownership of companies has dispersed into small pieces in the global financial markets and the management function has become largely separated from the shareholders.

The agency problem occurs when an investors provide capital to business where they typically will not hold any active position in managing the company. The management function has been delegated to the professional directors who operate the business on behalf of the shareholders. As a result, the management are able to consume the investment for self-interested purposes that benefit management but not the investors (see Jensen and Meckling 1976). This problem is intensified if the shareholder base is widely dispersed which is the case is most of the listed companies.

The owners, naturally, make an effort to ensure that the management act in the owners' interests and do not exploit the company's resources. These efforts borne by the investors are called agency costs that Jensen and Meckling (1976) divided in three types: 1) the monitoring expenditures borne by the principle, 2) bonding expenditures borne by the agent that limit the decision making of the agent, and 3) residual loss that incur regardless of the monitoring and bonding expenditures. Examples of the monitoring expenditures include external and internal audit, formal control systems, budget restrictions and incentive compensation contracts with management. Bonding expenditures relate to expenses borne by agent to guarantee alignment with the shareholder interest such as

contractual limitations on the manager's decision making power which impose costs to the company as well since the manager is not able take full advantage of all opportunities. The residual loss represents costs that take place regardless of the monitoring and bonding activities.

The issue under the agency theory is the separation of control and ownership of capital as the agent takes care of the capital owned by the principle. The separation of control and ownership is especially present in the listed companies (Jensen & Meckling 1976). Therefore, compensation agreements to incentivize management to act in the owners' interests is a key element to develop the firm structures (e.g. Jensen & Meckling 1976, Fama 1980). An efficient compensation agreement aligns the interest of agent and principle.

The interests of manager and owner are in conflict either when a manager is too risk adverse and restrict the actions to take opportunities that maximize the firm performance or the manager takes excessive risks to reach to the compensation targets (Fama 1980). Compensation agreements are effective when they are designed appropriately to link the firm success to the compensation paid to the management. When we consider the process for implementing and monitoring the optimal contracts between management and the shareholders board of directors is usually the body which has responsibility over the aligning the interests between the two parties. The board is considered as the pivotal governance mechanism for the alignment of interests (e.g. Fama & Jensen 1983). As the past literature has found that board has a key role in the corporate governance structure of firms we will focus on the board's role in the valuation of IPOs in this paper.

2.1.2 Information asymmetries and firm valuation

As we have noted in the previous sections, there is an inherent tension between management and investors due to the separation of control and ownership of capital. The information asymmetries between management and shareholders is driven by the agent-principle problem. The agency costs borne by the investors are reflected in the pricing that investors are willing to pay for securities. The costs associated with the monitoring

activities such as management's compensation agreements, audit fees, administration expenses for corporate governance etc., is readily measurable based on the income statement. Additionally, the investors take into account the residual loss when they determine the price they are willing to pay for share in the firm (Shleifer and Vishny 1997). Based on the agency theory (Jensen & Meckling 1976) the investors cannot completely eliminate the costs associated with the residual loss because management will always have some possibilities to make decisions with self-interest. Given this conflict of interest between management and investors we will next consider how does the existence of information asymmetries translate into the investors' willingness to offer capital to firms.

The financial markets are deemed to digest all the publicly available information and use the information to allocate capital to the most profitable options. Fama (1970) posits in his famous Efficient Market hypothesis that a market is efficient when "security prices fully reflect all available information". As such, it in the interest of the society that information is readily available to the market participants. As such, under the Efficient Market hypothesis we can expect that disclosure of information that is relevant to the firm performance is valuable to the investors and thus affecting valuation of equity.

Research focused on the functioning of capital markets has accumulated evidence implying that markets tend to be informationally inefficient. A body of research, which has performed fundamental analyses over trading strategies, has found abnormal returns spread over multiple years. The research suggests that prices might take years before reflecting available information (Kothari 2001). In his review of the literature, Kothari notes that there is a large interest among the academia, investors and standard setters to examine the significance of earnings management in relation to reported financial statements. Therefore, we can observe from the past research that firms operate in capital markets that are subject to imperfections of information and are exposed to risk of earnings management. Therefore, corporate governance mechanisms and the role of board can contribute to the protection of investors and efficient functioning of the markets.

Furthermore, past research focusing on the relationship between voluntary disclosures and reduced cost of capital show that management's actions to decrease information

asymmetry results in increased security valuation. Healy et al. (2001) summarize the past literature documenting the number of disclosures increases and the analysts' ratings of the disclosures improves before firms raise new capital. These observations show that firms that raise new capital increase their disclosures towards investors, thus, implying that the cost of capital decreases when firms increase sharing of information. This is also supported by Verrecchia (2001) who posits that information asymmetry is a component of cost of capital. He argues that the decision by management not to disclose specific information is a trade off whereby management benefits from the reduced disclosure (for example due to cost of disclosure preparation, proprietary information, competition sensitive information etc.) and pays for it as a higher cost of capital.

Based on review of the past research we have noted that information asymmetries influence the valuations that investors are willing to pay for an interest in a firm. This correlation can be expected to motivate firms to develop their quality of reporting towards external investors. This would be the especially if the company has rigid governance structure supporting the integrity of management and thus supporting management to maximize the firm value. This premise is supported by Bushman et al. (2001) who in their paper convey that enhanced quality of financial information reporting supports the equity value of a firm through lower estimation risk by investors, better financial information available to investors to select investments and assess management performance, and improved liquidity as more investors are willing to participate in the market. In the next section we will consider how firms would reduce the information asymmetries and gain trust of the investors.

2.1.3 Confronting information asymmetries

Healy et al. (2001) compose a framework to assess the key determinants of the information asymmetry and principle-agent problems. They propose three main attributes to solve the conflicting interests between agent and principle. These include 1) role of financial reporting regulation, 2) effectiveness of auditors and information intermediaries, and 3) corporate governance factors driving management's decisions to disclose information. In

this section we will discuss the characteristics of these three factors on information asymmetries between management and investors.

Regulation over financial reporting and corporate rules pertains to the financial reporting requirements, legal institutions, and corporate governance models. Recently in the academia, the focus of testing only one of these attributes the focus has rather shifted to consider a bundle of the different aspects of regulation (Aguilera et al. 2008). The public scrutiny over these governance mechanisms has increased due to the financial crises taken place during the second millennium. (Adams et al. 2010). Notable developments in the regulation include increased disclosure of information in US GAAP and IFRS, the Sarbanes-Oxley Act in the US, and the development of corporate governance models in various countries. The regulation provides rules for shareholder protection and equality, expropriation of assets by management etc. that build trust in the society (Shleifer and Vishny 1997) and thus can lower the risk premium required by investors.

Audit and intermediaries perform services that validate management's assertions over the financial reporting. The audit services are subject to the regulatory framework but research shows that external financers require hiring of external auditors even when regulation does not command an audit implying that investors value the audit opinion. The past research has not found a significant value add in audit opinions to the investors, however, the research implies that investors deem auditors as enhancing credibility. (Healy et al. 2001).

In addition, there is past academic literature on the role of financial analysts on investor decision making. The research shows that some disclosures produces by the financial intermediaries affect the stock price and thus are of value to investors. The research notes risk of credibility issues for instance if auditor is minimizing its own liabilities instead of enhancing the financial report credibility or auditor act in the interests of management who hire them. Further, the literature posits that financial analysts have incentive for over-optimistic forecasts in order to stimulate the trading activity (Healy at al. 2001). These reviews over the past research show that the financial intermediaries add value to the mitigation information asymmetries but not without issues. The scope of these services do not solve on their own the issue of the information asymmetry problem.

Finally, the last piece of the information asymmetry problem is the role of corporate governance in managing the financial reporting of firms. Shleifer et al. (1997) defined corporate governance as a mean to "assure financiers that they get a return on their financial investment." Boards have been elevated to the center of focus in the regulation reforms and academic research. (Adams et al. 2010). The role of board is to represent the interests of the investors and monitors the actions of management (e.g. Fama & Jensen 1983, Hermalin et al. 2003).

One of the key aspect on how the board fulfills this role is the design of the management compensation packages and monitoring of the compensation. These so call "optimal contracts" thrive to align the interests of the management and the shareholders (Bebchuk & Fried 2003). The significance of corporate governance has grown in the past decades and during the 21st century the development and implementation of the corporate governance structures both in Nordics and internationally. This is evidenced by the constant updates in the codes (e.g., examples of updates in corporate code issues/updates include Sarbanes-Oaxley act in 2002, Finnish Corporate Governance Code in 2015, OECD Principles of Corporate Governance in 2015 etc).

The secondary key task of board is generally regarded contribution to setting firm's strategy. Board are expected to collaborate with management on evaluation strategic decisions, help management on the decision making and monitoring the strategic direction of firm. For this purpose the board members' knowledge and credentials are valued as an attribute (Adams et al. 2010).

In the next section, we will discuss the corporate governance principles and how these may influence the trust in market place and reduce the cost of external capital.

2.2 Corporate governance and role of board

2.2.1 Definition of corporate governance

Corporate governance has been a topic of interest in the economic research dating back to Adam Smith's famous publication *The Wealth of Nations* (see Adams et al. 2010). In essence, the purpose of corporate governance is to develop mechanisms that ensure efficient management of enterprises that benefit the investors of business without discrimination. The steady operation of firms also benefits the societies because investors are able to allocate resources to the most profitable destinations, thus, maximizing the value potential of the economic activity. For instance, Shleifer & Vishny (1997) state "corporate governance deals with the agency problem: the separation of management and finance." Their definition focuses on protection of the external investors' return on an investment. More recently, the OECD Principles of Corporate Governance have been revised in 2015 and in the publication corporate governance was defined as:

"The purpose of corporate governance is to help build an environment of trust, transparency and accountability necessary for fostering long-term investment, financial stability and business integrity, thereby supporting stronger growth and more inclusive societies." (OECD Principles of Corporate Governance 2015)

Comparing the definitions of corporate governance between the Shleifer & Vishny (1997) and the OECD we can see that former is more limited to the goal of investor welfare protection and maximization while the latter definition accounts for more broad implications of efficient corporate governance mechanisms.

Corporate governance can be characterized as a complex set of mechanisms which are utilized to discipline management to act in the interest of the investors. The control mechanisms include both internal mechanisms such as, managerial incentive plans, director monitoring, and the internal labor market, and external mechanisms, such as

outside shareholder or debtor monitoring, the market for corporate control, competition in the product market, the external managerial labor market, and securities laws (Bushman & Smith 2001). These different mechanisms construct the corporate governance package. Bushman & Smith (2001) observe that historically the accounting research has heavily emphasized the role of the management compensation plans as a key element for incentive alignment. This has largely been influenced by the frequent use of compensation contracts in the listed companies in the US and the availability of related executive compensation data enabling extensive set of data for research.

Roe (2004) also outlines corporate governance in internal and external mechanism. Roe divides the internal mechanisms in two dimensions. First, the corporate governance has a horizontal dimension that is the relationship between the dominant shareholders and the dispersed shareholders. The focus of the horizontal dimension is to prevent and minimize the transfer of capital from the dispersed shareholders to the dominant shareholders who are able to influence control of a company and management decisions. Second, in Roe's model the corporate governance includes a vertical dimension that pertains to the dynamics between management and the dispersed stockholder base. This relationship relates to the theory of principle-agent and information asymmetry problems discussed in earlier sections and where the dominant is dominantly compensation contracts to align interests of management with those of the shareholders. Finally, Roe's model includes the external corporate governance mechanisms that relate to the legislative rules regulated by the political processes, which thrive to legitimize the governance of companies and create common set of rules.

As we have defined the key elements of corporate governance, we will next discuss the role of board in the corporate governance framework.

2.2.2 Board as a component of corporate governance

Board has a pivotal role in the corporate governance structures which is highlighted by the long history of board as a mechanism to manage companies, corporate governance principles such as OECD Principles of Corporate Governance (2015) or Finnish Corporate Governance Code 2015 that lay out specific recommendations for companies to set up a board, and the tasks and requirements of boards defined in various legislations. As such it is important to review the roles and tasks of board in modern corporate governance to better understand its existence and impact on managing a firm.

One argument for existence of boards is the legislation in various countries where firms are required to set up a board that has been laid out specific requirements in the governance of businesses. For instance, in Finland, the corporate law requires companies to elect board with specific tasks to monitor the business and ensure compliance with laws. Hermalin & Weisbach (2003) point out that while state and stock exchanges define various requirements for firms to structure the composition and tasks of boards, the boards are not set up to the bare minimum. This indicates that the board function is not solely a legal function but rather there is demand for the boards to act a body within the business management.

Consistent with the agency and information asymmetry problems discussed in the previous section, boards are usually associated as a tool to reduce this information gap between the agent and principle. In the literature review conducted by Adams et al. (2010) they summarized the role board in two key tasks: hiring, firing, and assessment of management, and setting strategy. The board's role as a mechanism to monitor the top management has been studied widely in the past research. For instance, Hermalin & Weisbach (1998) stated that one of the key tasks of board is to decide on hiring and firing of top management. Besides evaluation of management, board is deemed to add value as strategic actor that together with management evaluates strategic choices (e.g. Adams et al. 2010, Forbes & Milliken 1999).

As we can see past research has identified board's main activities as monitoring of top management and contributing to the strategic decision making. We can note these are

strategically important tasks for a successful firm and therefore an efficient board can positively contribute to firm performance. Thus, it begs to question what contributes to an effective board set up. In the next section, we will discuss the key relationship between board characteristics and the board's ability to execute its tasks.

2.3 Board characteristics as a factor of firm valuation

In the previous sections, we have noted that board has a significant role in the execution and monitoring of effective corporate governance. Board's principle task is the selection of top management and monitoring of the management performance ensuring that management acts in the interests of the investors (e.g. Farma & Jensen 1983). As such, board is considered as a key element in the current corporate governance mechanisms adopted in the various jurisdictions. While an efficiently operating board is a part of solution to the agent-principle problem, board can become part of the problem if management is able to influence the board structure and incentives adversely (Bebchuck & Fried 2003). Thus, board may fail in its role to represent the principle and instead act as an agent. Therefore, past research has focused on the questions of what factors and characteristics contribute to an optimal board. In this section, we consider the past literature on the topic of board characteristics.

2.3.1 Board size

Board size has been studied and proposed as an attribute that influences the effectiveness of board's ability to operate. If a board is too large it runs the risk of becoming too bureaucratic and inefficient to make decisions while too small a composition is less likely to have the optimal know-how and exchange of ideas to achieve best solutions. The relationship between oversized boards and inefficient decision making has been documented in the past research (Lipton & Lorsch, 1992; Jensen, 1993). Further, the free rider problem arises when the size of board is too big (Hermalin & Weisbach 2003).

Similar relationship between the board size and effectiveness of corporate governance have been found in other research papers. Large board size have been associated with awarding larger compensation packages to CEO (Core at al. 1999; Cahan et al. 2005). As the measuring and deciding for management compensation is a key task for board the more lucrative compensation associated with larger boards is indicative of management's ability to influence larger boards.

Lipton and Lorch (1992) propose a preferred number of board seats is eight or nine members. Jensen (1993) has similar result in his study stating that a board with more than seven or eight members are likely to be less functional and more easily to be influenced by CEO due to the dispersed power in board with too many members. Yermack (1996) had similar results in his paper concluding that small boardrooms increase firm's market value. Coles et al. (2008) found in their paper that the correlation between board size and effectiveness is not linear but rather the optimal board size is also dependent on the characteristics of the firm. Complex firms (e.g., R&D intensive business) have larger board rooms because they have greater need for advising while firms in more straightforward industries require smaller boards. Overall, the past research on the topic implies that larger boards negatively affect a board's ability to operate in an efficient manner.

2.3.2 Board independence

The board's main responsibility is to monitor the top management ensuring its actions serve the shareholders. Further, the board acts as an advisory counsel to the management taking part into the strategic decision making that has effects on the long-term performance of business. The theory and different studies in the academic research show that independence of board improves board's ability to fulfill its role in the safeguard of the investors and this has been noted to correlate positively with firm performance (see Coles et al .2008).

There are mixed evidences of the correlation between independence and firm performance. Previous studies have found a positive correlation between board independence and firm performance. Byrd et al (1992) observed in their test that companies with more than 50%

independent board members had higher returns on tender offers than the counterparts with less independent boards. Similar results were examined by Cotter et al. (1997) showing that firms, which have more independent boards, are paid higher premiums in acquisition bids. This is interesting observation which implies that for IPO valuation, too, the board independence drives higher valuations. Meanwhile, other studies have failed to see a positive correlation between board independence and firm performance. Hermalin & Weisbach (1991) used Tobin's Q to measure the impact of board independence on firm performance and noted to relation between the two variables. Similar results were concluded by Bhagat & Black (2002) in a later study.

While the past research has examined mixed results with the relationship of board independence and financial performance, other measures have also been examined relating to board independence. Weisbach (1988) showed that when a company is performing poorly board seats are more likely to be filled with independent members, which suggests that independent members are regarded as more effective directors than management representatives. Klein (2002) found in a quantitative test a negative correlation between proportion of independent directors and earning management measured through abnormal accruals. Hermalin & Weisbach (2003) in their survey made similar notions concluding that board composition has not been exhaustively evidenced to associate with firm performance. However, they stated that board composition appears to correlate positively with corporate governance issues including CEO replacement, acquisitions, poison pills and executive composition. As such, these observations indicate that board independence may contribute positively to investors' perception of a firm's governance and thus add to the valuation of an entity.

2.3.3 CEO-chairman duality

The corporate governance recommendations suggest that CEO should not chair the board of directors. For instance, the Finnish Corporate Governance Code (Securities Market Association 2015) recommendation 20 states that the CEO is restricted to chair the board.

Consensus over separation of the two roles is also shared in the academic literature, which we discuss in this section.

The role of board is to represent the interests of the investors and monitors the actions of management (e.g. Fama & Jensen 1983, Hermalin et al. 2003). One of the key aspect on how the board fulfills this role is the design of top management compensation packages and monitoring of the compensation. Therefore, it is logical that a conflict of interests arises and the board's ability to perform the task of monitoring management and deciding on the compensation is adversely affected if the CEO chairs the board (Jensen 1993). The separation of CEO and chairman roles is also consistent with the agent-principle problem as the purpose of the board is to represent the principle and advocate their interests.

While in theory, the CEO could excuse himself or herself from the decision making over the management compensation and performance evaluation in practice this is difficult because the chair has a pivotal role in leading the board and is constantly working with the board members over setting the agenda and other principle tasks of the board. (Cahan et al. 2005). Furthermore, the CEO has an incentive to "capture" the board in order to secure his or her job and maximize the compensation. (Hermalin et al. 2003). The unfavorable implications of CEO-chairman dual role was, for instance, observed in a study by Farber (2005) showing that fraud was more common in companies with CEO as a chair of the board. Also, the a positive correlation between CEO compensation and CEO-chairman duality has been documented in the past research (e.g. Core al al 1999, Cahan et al. 2005). These findings indicate that the board is less efficient in restricting the power of CEO when the CEO is the chair. As such, these findings in the previous studies indicate that the effectiveness of board is harmed when the CEO has the dual position and as such might negatively affect the valuation investors give to a company.

2.3.4 Gender representation

Gender diversity has been a frequent topic on the policy making of many countries (Adams et al. 2015). Norway is a famous example of the legislative requirement for gender diversity as the country implemented gender quota of 40% of board seats at listed

companies in 2003 (Ahern et al. 2012). In Finland, there are not legal requirements for gender quotas. However, the Finnish corporate governance code, which is the business society's self-regulation, includes a recommendation to have both genders represented in the board (Securities Market Association (Finland) 2015). Further, the Finnish government declared a principle in 2015 stating that the large and mid-sized listed companies should have minimum of 40% representation of each gender by the year 2020 (Finnish Chambers of Commerce 2016). Thus, we can see that the gender equality in the board room is an active topic in the policy decision making both in the governmental as well as the business institutions in various countries. Therefore, the gender diversity is a topical matter and we will next look for what the previous studies have documented over the gender diversity in boards.

Past studies have examined how the gender diversity affects the dynamics of board functions. Adams et al. (2015) summarized in their literature review that diversity has been argued to improve efficiency of boards and it has been suggested that the ethical behaviors vary between female and males directors. Further, studies have proposed that women are more risk-averse. However, a contradicting evidence was noted in a study over Swedish boards, where Adams and Funk (2012) concluded that female directors were more inclined to take risk compared to male counterparts.

Also, the relationship between gender diversity and firm performance has been subject to various studies. Post and Byron (2015) performed a meta-analysis of female directors' impact on firm performance by combining 140 past studies. They noted that female board representation was associated with accounting returns. Further, they found that female board membership correlated positively with market valuation in countries greater gender parity while the relationship was negative in countries with low gender parity. This finding implies that in Nordic countries such as Finland and Sweden, female representation in the board would correlate positively with firm valuation. Both the counties are in the top five of the Global Gender Gap Report 2017 published by World Economic Forum (2017). As such, it is interesting see how does the relationship between gender diversity and firm valuations correlate in the IPO's in Finland and Sweden.

3. HYPOTHESES

In the previous chapter we were discussing the past research literature on the board's role in corporate governance and firm performance. Based on the observations noted in the past literature we will now proceed to develop our hypotheses relating to the empirical test over correlation between IPO valuation and board characteristics.

Board size has been studied and proposed as an attribute that influences the effectiveness of board's ability to operate. The relationship between oversized boards and inefficient decision making has been documented in the past research (Lipton & Lorsch, 1992; Jensen, 1993). Large board size have been associated with awarding larger compensation packages to CEO (Core at al. 1999; Cahan et al. 2005) and board are more easily to be influenced by CEO due to the dispersed power in board with too many members (Jensen 1993). Yermack (1996) had similar results in his paper concluding that small boardrooms increase firm's market value. Lipton and Lorch (1992) propose a preferred number of board seats is eight or nine members while Jensen (1993) has similar result suggesting a board with more than seven or eight members are likely to be less functional.

H1: Smaller boards correlate positively with firm valuation.

Board's main responsibility is to monitor the top management ensuring its actions serve the shareholders. The theory and different studies in the academic research show that independence of board improves board's ability to fulfill its role in the safeguard of the investors and this has been noted to correlate positively with firm performance (see Coles et al. 2008, Byrd et al. 1992, Cotter et al. 1997). However, there is mixed evidences of the correlation between independence and firm performance (Hermalin & Weisbach 1991, Bhagat & Black 2002). While Hermalin & Weisbach (1991) did not see correlation between board independence and firm performance they stated that board composition appears to correlate positively with corporate governance issues including CEO replacement, acquisitions, poison pills and executive composition. As such, overall the past studies indicate that board independence may contribute positively to investors' perception of a firm's governance and thus add to the valuation of an entity.

H2: Board independence correlates positively with the firm valuation

The CEO has an incentive to "capture" the board in order to secure his or her job and maximize the compensation. (Hermalin et al. 2003). The unfavorable implications of CEO-chairman dual role was, for instance, observed in a study by Farber (2005) showing that fraud was more common in companies with CEO as a chair of the board. Also, the positive correlation between CEO compensation and CEO-chairman duality has been documented in the past research (e.g. Core al al 1999, Cahan et al. 2005). These findings indicate that the board is less efficient in restricting the power of CEO when the CEO is the chair. As such, these findings in the previous studies indicate that when the CEO has the dual position and as such might negatively affect the valuation investors give to a company.

H3: Firms with CEO-chairman dual role are given discounted valuations

Post and Byron (2015) found that female board membership correlated positively with market valuation in countries greater gender parity while the relationship was negative in countries with low gender parity. This finding implies that in Nordic countries such as Finland and Sweden, female representation in the board would correlate positively with firm valuation.

H4: Boards with more equal gender representation correlate positively with firm valuation.

We will test these hypotheses in the chapter 5 "Empirical results". First, we will present the methodology as well as the data we will use to execute the empirical test.

4. DATA AND METHODOLOGY

4.1. Data

This study is conducted with initial public offerings made in Finland and Sweden during 2012-2015. The data includes both firms listed in the main stock exchanges Nasdaq Helsinki and Nasqad Stockholm as well as the less regulated First North exchanges in Helsinki and Stockholm. We exclude financial companies as they operate in a more regulated environment compared to non-financial companies.

It is a topical matter to study the board characteristics in the new listings because 2012-2015 saw high volumes of new IPOs. Further, the First North marketplace is a relatively new set up to exchange stocks in the Nordics and therefore it is interesting to compare the firms listing in the main market and the alternative exchange.

The data consists of the financial statement data, stock price, and the details of the board of directors. The financial data is retrieved from listing companies prospectuses while the stock price on the listing day in obtained from Nasqad website and Orbis data resource. The data concerning the characteristics of boards is handpicked from the prospectuses and the financial reports which are available on the firms' websites.

4.2. Method

We will conduct this study by performing an OLS regression analysis measuring the relationship between the IPO valuation and the board characteristics discussed in the earlier sections. Through the regression analysis, we can observe the potential impact of board characteristics to the firm valuation at the initial public offering stage. First, we will present how we measure the dependent variable IPO valuation. Next, we will discuss the independent and control variables of the regression analysis. In the last section of the chapter, construct the regression analysis models.

4.2.1. Dependent variable: IPO valuation

For modelling the relationship between IPO valuation and board characteristics, we first need to establish valuation measure that best presents the relative value perceived by investors. As of the measurement of firm valuation, we will use Tobin's Q. This is ratio calculated as the market value of a firm divided by the book value of the firm's assets.

Tobin's Q Ratio

$$Tobin's\ Q = \frac{Total\ Market\ Value\ of\ Firm}{Total\ Asset\ Value}$$

Tobin's Q has been used in other studies to measure the relative valuation of firms as the measure compares the stock price paid by investors compared to the assets in the books (e.g. Hermalin & Weisbach 1991, Bhagat & Black 2002, Gompers et al. 2003). Tobin's Q ratio indicates the price above or below the asset price of the business and thus represents the expectations of investors over the firm's ability to perform.

For the total market value, we will use market cap of the firm shares plus the book value of the liabilities. For the market cap, we will use the value of the shares at the end of the first trading day of the initial public offering. The total liabilities and asset values will be retrieved from the latest balance sheet represented in the prospectus of the offering.

In our regression model we will use a natural logarithm of Tobin's Q as the dependent variable. Our analysis of the Tobin's Q showed very high values of the Tobin's Q among the firm observation (refer to table 5). Therefore, we opted to use natural log instead of the nominal value because of the high spectrum of values in the firm observations in order to normalize the values and avoid potential effect of outliers. The high variation is reasonable because firms that list in the market are often at relatively early stage of life and the market valuation includes expectations on the future growth of earnings.

4.2.2. Independent variables: board characteristics

The board characteristics are the independent variables in the focus of this study. We have chosen four key variables to examine in the empirical test.

Board size is determined by the number of directors in the board at the time of the IPO.

Board independence is measured as a ratio of independent directors relative to the total number of directors in a board. An independent director is defined in this study as a member who does not belong to the executive management. Generally accepted corporate governance recommendations such as the OECD Principles of Corporate Governance 2015 and the Finnish Corporate Governance Code 2015 classify directors who are in the management as non-independent. Furthermore, this attribute is feasible and effective measure to account for the board independence.

CEO-chairman duality is also an additional variable that closely relates to the board's ability to independently assess executive management performance and represent the interests of the shareholders. This is a dummy variable that will given value 1 if the CEO acts as a chairman and value zero if the roles separated.

Finally, the last independent variable of the regression model is *gender representation*. This will be measured as a ratio of female directors relative to the total board size.

4.2.3. Control variables: firm characteristics

We will include control variables in the regression analysis to account for other factors that contribute to the firm valuation. First control variable is the size of company measured as a natural logarithm of the total asset book value disclosed in the prospectus. For instance, Yermack (1996) used the same variable to control for firm size. The profitability of the firm naturally has impact on the valuation. To account for the profitability we use operating profit to total assets ratio as a controlling variable. This study covers multiple

years (2012-2015) and therefore we will use dummy variable to eliminate the impact of year. Also, we consider the impact of industry on the firm valuation. The industries are defined based on the industry categories reported by Nasdaq that utilizes the Industry Classification Benchmark standard including 13 different industries. Finally, we will control the market place (main market vs First North) and the listing country in the model. Below is a summary of the defined variables.

Table 1 Regression analysis - variable definitions

Variable	*Variable definition*
TobinsQ	Tobin's Q
LNTQ	Natural logarithm of Tobin's Q
BoardSize	Number of directors in board. Indicates the board set up and dynamics.
BoardInd	Ratio of independent directors relative to total number. Indicates board independence.
BoardDual	CEO-Chairman duality dummy variable. Indicates the board set up and dynamics.
FemDirectors	Ratio of female directors relative to total number. Indicates gender representation in board.
LN(BV)	Natural logarithm of total asset book value indicating the size of firm.
OP/BV	Operating profit to book value of assets ratio indicating the firm performance.
Year	Dummy variable for the year of IPO to eliminate impact of timing.
Industry	Dummy variable for the industry to eliminate industry impact on valuation.
Main_FN	Dummy variable for the listing exchange defined as main market of First North marketplace
Country	Dummy variable for country

This table defines the variables used in the models.

4.2.4. Regression analysis

In the previous sections, we have defined the variables that will be considered in the regression analysis. In this section, we will formulate the equation to model the regression analysis. This study is performed by using quantitative analysis to identify correlations between firm valuation and the board characteristics as hypothesized in the third chapter. We will use multiple regression analysis as the research method. We reflect the results of the regression analysis relative to the past results of academic research on the relationship between board and firm performance and valuation. Additionally, we analyze the data with descriptive statistics and correlation analysis.

The empirical analysis is performed in two stages. First, we will study the impact of the firm specific variables on the IPO valuation to have understanding over how the firm specifics alone affect the valuation. The regression is modelled through the following equation:

$$LNTQ = \beta_1 LN(BV) + \frac{\beta_2 OP}{BV} + \beta_3 Year + \beta_4 Industry + \beta_5 Main\_FN + \beta_6 Country$$

In the second stage, we add the actual independent variables into the equation. Thus, our equation for the second stage is:

$$LNTQ = \beta_1 BoardSize + \beta_2 BoardInd + \beta_3 BoardDual + \beta_4 FemDirectors + \beta_5 LN(BV) + \frac{\beta_6 OP}{BV} + \beta_7 Year + \beta_8 Industry + \beta_9 Main\_FN + \beta_{10} Country$$

5. RESULTS

5.1. Descriptive statistics

In this chapter we are presenting details over the sample selection and how the final sample was reached. Further, we will discuss the key characteristics of the sample and compare the results between the main market and Fist North listed companies.

Review of firm observations

The data was collected from Nasdaq website, Orbis data resource and the prospectuses issued by the companies. During the sample period 2012-2015 there were total 113 IPOs issued in Finland and Sweden. Within these companies there were 11 samples for which the prospectus was not available at the time of this study and therefore we needed to exclude these companies as the necessary data was not available. Next, we performed a boxplot analysis of each variable to identify outliers in the data. We excluded samples that had a variable with value more than 3 times the interquartile range in order to avoid abnormal observations and to improve reliability of the regression model. As a result, we excluded total of 12 samples with six instances due to outliers in Tobin's Q and six instances due to outliers in OP/BV variable. The final sample size of the study amounted to 90 firm observations with details laid out in table 2 below.

Table 2 Sample selection criteria

Firm observations	*Main market*	*First North*	*Total*
IPOs in Nasdaq	34	79	113
Less:			
Companies with missing data	-4	-7	-11
Outliers in Tobin's Q	0	-6	-6
Outliers in OP/BV variable	0	-6	-6
Total Sample	30	60	90

This table presents how the final sample was reached.

In the final sample we had 30 observations from the main market and 60 observations from the First North marketplace. Thus, we can see that the listing activity was higher in the alternative marketplace that is reasonable as it has less strict requirements. Also, we conclude that our final sample is consistent with the distribution between Main market and First North before the exclusions we had to do in the final sample.

The distribution of sample by industry and country is presented in the table 3 below. The top two industries in both Main market and First North are the same: Industrials (Main: 37%, FN: 28%) and Health Care (Main: 20%, FN: 27%). The biggest difference between the market places is Technology sector which has 12 listings (20%) in First North compared to two listings in the Main market (7%). The IPO activity has been substantially higher in Sweden (75 listings) compared to Finland (15 listings).

Table 3 Sample distribution by country and industry

Main market						
	Finland	*%*	Sweden	%	Total	*Total %*
Basic Materials	1	*14 %*	-	0 %	1	3 %
Consumer Goods	-	*0 %*	5	22 %	5	17 %
Consumer Services	2	*29 %*	2	9 %	4	13 %
Health Care	1	*14 %*	5	22 %	6	20 %
Industrials	3	*43 %*	8	35 %	11	37 %
Oil & Gas	-	*0 %*	-	0 %	0	0 %
Technology	-	*0 %*	2	9 %	2	7 %
Telecommunications	-	*0 %*	1	4 %	1	3 %
Main market Total	***7***		***23***		***30***	**100 %**
First North						
	Finland	*%*	Sweden	*%*	Total	*Total %*
Basic Materials	-	*0 %*	2	*4 %*	2	3 %
Consumer Goods	-	*0 %*	4	*8 %*	4	7 %
Consumer Services	1	*13 %*	5	*10 %*	6	10 %
Health Care	1	*13 %*	15	*29 %*	16	27 %
Industrials	4	*50 %*	13	*25 %*	17	28 %
Oil & Gas	-	*0 %*	3	*6 %*	3	5 %
Technology	2	*25 %*	10	*19 %*	12	20 %
Telecommunications	-	*0 %*	-	*0 %*	0	0 %
First North Total	***8***		***52***		***60***	**100 %**
Total	**15**		**75**		**90**	

This table shows how the sample firm observations are distributed among industries by country and listing market. The industry classification is based on the Nasdaq Nordic Exchange classification.

The listing activity has been increasing year over year during the sample period. Below Is table 4 which presents the listing activity by year. The IPO activity has been picking pace since 2012. We will control the listing year in our regression model as the listing year can affect the firm valuation as the financial markets have been improving since 2012.

Table 4 Sample distribution by year

Industry	*2012*	*2013*	*2014*	*2015*	*Total*
Main Market	0	4	11	15	30
Finland	-	3	1	3	7
Sweden	-	1	10	12	23
First North	4	6	21	29	60
Finland	1	-	3	4	8
Sweden	3	6	18	25	52
Total	***4***	***10***	***32***	***44***	***90***

Above we have reviewed the details over the IPO activity during the sample period and statistics over the firm observations within the sample. Next, we will focus on the descriptive statistics over the variables.

Descriptive statistics over the regression variables

In our regression analysis we measure the impact of board characteristics on IPO valuation through Tobin's Q. Below is Table 5 is descriptive statistics over the distribution of the Tobin's Q value among the sample observations.

Table 5 – Descriptive statistics over regression variables

Variable	***Minimum***			***Maximum***			***Median***			***Std. Deviation***		
	Main	*FN*	***All***	*Main*	*FN*	***All***	*Main*	*FN*	***All***	*Main*	*FN*	***All***
TobinsQ	0,96	0,84	**0,84**	13,35	16,29	**16,29**	1,73	3,98	**3,04**	2,73	3,52	**3,45**
BoardSize	4,00	3,00	**3,00**	9,00	8,00	**9,00**	6,50	5,00	**5,00**	1,20	1,11	**1,31**
BoardInd	0,50	0,50	**0,50**	1,00	1,00	**1,00**	1,00	0,83	**0,88**	0,13	0,15	**0,15**
FemDirectors	0,00	0,00	**0,00**	0,33	0,50	**0,50**	0,17	0,00	**0,14**	0,10	0,12	**0,12**
BoardDual	0,00	0,00	**0,00**	0,00	0,00	**0,00**	0,00	0,00	**0,00**	0,00	0,00	**0,00**
LN(BV)	17,49	13,84	**13,84**	23,67	21,32	**23,67**	21,38	17,22	**17,91**	1,80	1,48	**2,37**
OP/BV	-0,09	-1,42	**-1,42**	0,30	0,41	**0,41**	0,07	-0,07	**0,03**	0,07	0,39	**0,35**

The table shows descriptive statistics over the regression variables.

In the table 5 is presented descriptive statistics over the regression variables. Based on the analysis we can see differences in the attributes between firms listed in Main market and First North listings. Tobin's Q deviates more in the First North entities with standard deviation of 3,52 compared to 2,73 in the Main market listings. This indicates that the valuation in the First North companies relative to the book value fluctuates more in the First North listings, which is reasonable as the companies are smaller in size and valuation is more dependent on future expectations.

We can also see the difference in the size of companies by looking at the natural logarithm of book value which averages 21,07 at Main market compared to 17,19 at First North. Also, the operating profit relative to balance sheet book value fluctuates notably more in the First North (standard deviation: 0,39) compared to Main market (0,07). Further, the median OP/BV ratio at First North is negative 0,07 indicating that majority of the FN firms recorded operating loss and consequently valuation of these companies is dependent more on reaching future profitability. The relatively large deviation among the First North listed companies can also make more challenging to find correlation between the valuation of firms relative to the dependent variables since there is high deviation in the firm characteristics.

Based on the descriptive statistics presented in table 5 we can also see variation between Main market and Forth North listed firms relative to the independent variables. The median

number of directors at Main market is 6,5 compared to 5 at First North. Further, the independence of board at Main market is higher with median value 100% compared to 83% at First North. Also, we can observe that the portion of female directors is higher at Main market (median: 17%) than at First North (0%).

In table 6 we compare the variables by year and market place. Median board size in the Main market listings has fluctuated between 5,5 and 7. In the last observed year (2015) which has most samples the median board size was 6 and the standard deviation in 2015 was lowest indicating that the heterogeneity of board size was highest during 2015. At First North the median board size has remained at the same level each year amounting to 5 directors. Also, at First North the standard deviation is lowest at 2015 indicating convergence in the board size among the listing firms.

Board independence has same median value across the observation period each year at Main market amounting to 100% median value. The observed minimum value has increased from 50% observed in 2012 to 70% observed in 2014 and 2015. At First North listings the board independence measure has fluctuated over years and no evident patterns is visible with median independence ratio varying between 80% and 100%. Also, it is notable that the standard deviation of board independence ratio (0,2) in the last observation year (2015) is higher compared to Main market IPOs (0,1). This indicates that there is more variation in First North listings and the board independence is not as strong attribute in the Fist North listings as it is in Main market firms.

We note that there is an upwards trend in the gender representation year over year. At Main market the median portion of female directors was 10% in 2013 compared to 30% in 2014 and 20% is 2015. At First North listings the trend is less evident as the highest median value was in 2013 with 20% compared to decreasing measures of 10% in 2014 and 0% in 2015.

Finally, the statistics show that none of the sample firms had a CEO-chairman dual role. This clearly shows that companies in Finland and Sweden have implemented the corporate governance principle around separation of the CEO and chairman roles. This interesting as it may be expected that many firms that offer IPO will have a founder as a large shareholder and possibly with an active role in management of the company. Clearly, even

if founder is in CEO position the firms and founders of these firms have adopted the principle to separate the roles. As we concluded that our sample has no variation in the CEO-chairman variable we will not include this variable in our model and further statistics.

Table 6 – Descriptive statistics over IPOs by year and marketplace

	Minimum				Maximum				Median				Std. Deviation			
Main Market	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***
TobinsQ	-	1,0	1,0	1,0	-	2,5	2,0	13,3	-	1,5	1,7	1,8	-	0,6	0,3	3,6
BoardSize	-	4,0	4,0	6,0	-	7,0	8,0	9,0	-	5,5	7,0	6,0	-	1,3	1,2	1,1
BoardInd	-	0,5	0,7	0,7	-	1,0	1,0	1,0	-	1,0	1,0	1,0	-	0,3	0,1	0,1
FemDirectors	-	0,0	0,0	0,0	-	0,2	0,3	0,3	-	0,1	0,3	0,2	-	0,1	0,1	0,1
LN(BV)	-	17,5	19,4	17,8	-	21,0	23,7	23,7	-	20,3	21,8	20,6	-	1,6	1,2	2,1
OP/BV	-	0,0	0,0	-0,1	-	0,1	0,1	0,3	-	0,1	0,1	0,1	-	0,1	0,0	0,1
First North	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***	***12***	***13***	***14***	***15***
TobinsQ	3,6	1,6	1,0	0,8	8,3	10,8	16,3	14,6	4,1	5,0	4,0	4,1	2,3	3,2	4,0	3,5
BoardSize	5,0	3,0	3,0	3,0	6,0	7,0	8,0	8,0	5,0	5,0	5,0	5,0	0,5	1,3	1,2	1,1
BoardInd	0,6	0,7	0,6	0,5	1,0	1,0	1,0	1,0	0,9	0,8	1,0	0,8	0,2	0,1	0,1	0,2
FemDirectors	0,0	0,0	0,0	0,0	0,2	0,3	0,3	0,5	0,0	0,2	0,1	0,0	0,1	0,1	0,1	0,1
LN(BV)	15,4	15,5	14,9	13,8	18,8	18,3	20,4	21,3	17,1	16,6	17,7	17,2	1,5	1,0	1,6	1,5
OP/BV	-0,4	-0,5	-1,4	-1,3	0,3	0,1	0,2	0,4	0,1	0,0	-0,1	-0,1	0,3	0,2	0,4	0,4

Table presents descriptive statistics over the firm observations by year and marketplace between 2012-2015. Number of firm observations:
Main market: 2012: 0; 2013: 4; 2014: 11; 2015: 15.
First North: 2012: 4; 2013: 6; 2014: 21; 2015: 29.

Based on review of the variable's standard deviations we can note that the fluctuation is not significant and as such there should not exist abnormal values that disturb results of the regression analysis. Before moving into the regression analysis, we will review correlation between the dependent and independent variables. It is worthwhile to review correlation between the independent variables in order to identify possible collinearity relationships.

5.2. Pearson and Spearman correlation

Table 7 Pearson and Spearman correlation matrix

	LNTQ	BoardSize	BoardIndepenence	FemDirectors	LN(BV)	OP/BV	Main_FN	Year	Industry
LNQ	1,000	-0,131	-0,049	-0,079	-,602**	-0,168	-,420**	0,070	,278**
Sig. (2-tailed)		0,220	0,647	0,462	0,000	0,113	0,000	0,510	0,008
BoardSize	-0,118	1,000	,271**	0,017	,445**	0,172	,546**	0,016	0,091
Sig. (2-tailed)	0,269		0,010	0,874	0,000	0,106	0,000	0,881	0,396
BoardIndepenence	-0,052	,266*	1,000	0,170	0,132	-0,013	,210*	0,007	-0,132
Sig. (2-tailed)	0,627	0,011		0,108	0,216	0,901	0,046	0,950	0,216
FemDirectors	-0,043	0,043	0,183	1,000	,209*	-0,057	,250*	-0,033	0,095
Sig. (2-tailed)	0,687	0,690	0,084		0,048	0,592	0,017	0,758	0,375
LN(BV)	-,563**	,470**	0,115	,227*	1,000	,337**	,711**	0,051	-,291**
Sig. (2-tailed)	0,000	0,000	0,280	0,031		0,001	0,000	0,636	0,005
OP/BV	-,321**	0,147	-0,088	-0,024	,386**	1,000	,326**	0,012	-,215*
Sig. (2-tailed)	0,002	0,167	0,409	0,822	0,000		0,002	0,908	0,042
Main_FN	-,406**	,542**	0,202	,247*	,749**	,334**	1,000	0,036	-0,146
Sig. (2-tailed)	0,000	0,000	0,056	0,019	0,000	0,001		0,738	0,170
Year	0,029	0,052	0,027	0,032	0,104	-0,008	0,066	1,000	-0,166
Sig. (2-tailed)	0,788	0,625	0,798	0,766	0,328	0,939	0,537		0,118
Industry	,262*	0,101	-0,117	0,107	-,250*	-0,195	-0,135	-0,186	1
Sig. (2-tailed)	0,013	0,342	0,273	0,315	0,018	0,066	0,206	0,080	

The matrix presents the Pearson (below the diagonal) and Spearman (above the diagonal) coefficients between variables (n = 90). For variable definitions refer to the table 1. ** stands for correlation is significant at the 0.01 level (2-tailed), and * for the 0.05 level (2-tailed).

Table 7 presents both Pearson and Spearman correlations among the regression variables. The results demonstrate that the independent variables do not have significant correlation with board characteristics. The strongest correlation with LNQ is associated with Board Size, however, the p-value is 0,27 and thus not statistically significant. The correlation with firm valuation is negative 0,12 indicating that firms with smaller boards are valued with higher equity value in IPOs. Also, surprisingly, board independence is associated with negative correlation, however, the beta is close to zero amounting t -0,05 and with p-value of 0,63. Similar results are with gender representation (beta of -0,4 and p-value of 0,68).

The control variables have higher p-values relative to the natural logarithm of Tobin's Q. The IPO valuation, as measured by natural log of Tobin's Q, is statistically correlated with LN(BV) (correlation of -0,56). The negative correlation indicates that companies with smaller balance sheet are in a more early stage of the firm life and might be operating in a sector such as technology which requires less capital in the balance sheet. Further, OP/BV is negatively correlated with LNQ with beta of +0,32. This is likely to result from similar reasons as LN(BV) ratio relating to smaller, fast growing businesses. Finally, industry dummy variable was statistically significant relative to the firm valuation while listing year was not found to be statistically significant.

Additionally, we observed that the control variable Main_FN variable had significant correlation with all the independent variables as well as LN(BV) and OP/BV control variables. Therefore, we decided to exclude the variable from the regression model in order to avoid disturbance of results due to multicollinearity.

Furthermore, we noted that since the classification between Main market listings and First North listings correlates with many of the variables we decided to run the regression model separately for the Main market sample and First North sample since according to the correlation analytics separation between Main market and First North is driving the firm valuation. Thus, we will investigate if there are differences in the results of regression analysis among these two group of listings. To observe in more detail the relationships between the dependent and independent variables we will next review results of the regression analysis.

5.3. OLS regression analysis

In this chapter we will review the results of testing the sample with the regression models presented earlier. The regression analyses are executed in phases. First, we will investigate the sole impact of firm characteristics on the IPO valuation, while in the second phase we will add the variables measuring board characteristics. Further, we will test perform the test to the combined data set as well as separately to the Main market and First North samples. The tests are performed across the total time period as this study is not a time series test but rather focuses on the determinants on IPO valuation as a cross-sectional research.

5.3.1. Impact of firm characteristics on IPO valuation

In table 8 we present the results of regression analysis in which we study the impact of firm characteristics on the IPO valuation. These firm characteristics will be used in the final regression model as control variables. We have performed the analysis both on the total firm population as well as separately over the Main market and Fist North listings and these results are presented in the table.

Table 8 Impact of firm characteristics on IPO valuation

	All firms		***Main market***		***First North***	
Variable	β	Sig.	β	Sig.	β	Sig.
(Constant)	4,607	0,000	3,030	0,128	6,529	0,000
Control variables						
LN(BV)	**-0,235**	0,000	-0,143	0,140	**-0,293**	0,000
OP/BV	0,305	0,238	1,290	0,529	0,360	0,214
Industry						
Industrials	-	-	-	-	-0,197	0,337
BasicMaterials	**0,715**	0,029	0,995	0,137	0,321	0,427
OilGas	-0,022	0,952	0,263	0,695	-0,526	0,233
ConsumerGoods	-0,016	0,939	0,301	0,382	-0,384	0,162
ConsumerServices	0,130	0,570	0,201	0,625	-0,055	0,868
HealthCare	0,186	0,276	0,082	0,828	-	-
Telecommunications	-0,358	0,550	-0,566	0,439	-	-
Technology	**0,532**	0,012	-	-	0,290	0,195
Market						
Main_FN (FN=0, Main=1)	**0,500**	0,023	-	-	-	-
Year						
Yr2012	-	-	-	-	-	-
Yr2013	0,468	0,086	0,085	0,905	0,194	0,500
Yr2014	**0,497**	0,002	0,579	0,155	-	-
Yr2015	-	-	-	-	**-0,466**	0,009
Country (FIN=0, SWE=1)	**0,453**	0,019	0,478	0,212	0,234	0,363
N	90		30		60	
Adj. R^2	0,440		0,126		0,425	
Model F-value	6,372		1,381		4,964	
Model sig.	<0,001		0,262		<0,001	

The table shows impact of firm characteristics on IPO valuation on total sample as well as broken down in Main market and First North listings. The table reports correlation coefficients (β) and statistical significance. Correlation coefficients with statistical significance at 5 per cent have been bolded.

Based on the statistics reported in table 5 we can see that size of firm measured as natural logarithm of total book value affects the firm valuation with high statistical significance (sig. < 0,001). The correlation is negative with firm valuation, which indicates that the smaller sized companies have higher IPO valuations. This might be driven by that smaller companies get higher valuation factors given higher growth expectations compared to stabilized businesses. The correlation between operating performance (measured as operating profit to book value) and firm valuation failed to conclude significant correlation with p-value of 0,238. The correlation coefficient is positive (0,035), which is consistent with our expectations.

Significant correlation was found for marketplace (Main market vs First North) with correlation coefficient of positive 0,5. This indicates that firms listed in the Main market are valued higher. Further, the year dummy variable was found to have significant impact on the valuation and thus it is reasonable to include the dummy in the final regression. However, as we noted in the Pearson and Spearman correlation analyses (refer to table 7) the Main_FN variable correlates with the other independent variables. In order to avoid multicollinearity problem we will run the regression model without the Main-FN variable. Further, the country of listing was found with significant impact on IPO valuation with p-value of 0,019. The dummy variable indicates that firms listed in Sweden were given higher valuations.

Further, we ran the regression analysis for the Main market and First North listings separately. The results show that the Main market specific sample is not statistically significant (p-value 0,262) while the First North specific sample is significant (p-value less than 0,001). The adjusted R^2 value for the total sample amounts 0,440 and for First North amounts to 0,425. Next we will combine the control variables with the independent variables that focus on the board characteristics and run the complete regression model.

5.3.2. Impact of board characteristics on IPO valuation

In table 9 is presented the results of the regression analyses that have been performed to investigate the board characteristics that are the focus of this study. The regression analysis was run for the total sample as well as separately broken down into Main market and First North listings in order to potentially identify the key underlying differences between Main market and First North listings. The regression analysis was run with two different models for each sample. In column (1) presented in the table we used all the variables identified earlier in the methodology build up of the regression model. In column (2) we eliminated all the variables that were identified to have little explanatory power over the board – IPO valuation relationship based on the analyses performed in earlier sections. In model (2) we included BoardSize, LN(BV), and Country variables.

The regression model 1 has a relatively strong correlation with the IPO valuation resulting in adjusted R square of 0,36. This can be deemed as a satisfying level of explanatory power. Further, the regression model is statistically significant with p-value less than 0,001. When we run the regression analysis with model 2 that includes less variables there are not significant differences in the correlation coefficients nor in the statistical significance of the model. Therefore, we observe that the BoardSize, LN(BV), and Country variables have high level of explanatory value over the firm value of the sample firm observations.

Table 9 Impact of board characteristics on IPO valuation

	All firms				***Main market***				***First North***			
Variable	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.
Model	*(1)*		*(2)*		*(1)*		*(2)*		*(1)*		*(2)*	
(Constant)	4,281	0,000	4,429	0,000	2,002	0,341	3,515	0,025	6,530	0,000	6,124	0,000
Independent variables												
BoardSize	**0,134**	0,031	**0,135**	0,014	0,007	0,950	0,115	0,225	0,145	0,104	0,116	0,110
BoardIndepenence	-0,125	0,792	-	-	-0,081	0,932	-	-	-0,396	0,493	-	-
FemDirectors	0,434	0,441	-	-	1,563	0,241	-	-	0,140	0,840	-	-
Control variables												
LN(BV)	**-0,240**	0,000	**-0,240**	0,000	-0,133	0,141	**-0,194**	0,013	**-0,340**	0,000	**-0,329**	0,000
OP/BV	-0,061	0,806	-	-	2,226	0,224	-	-	-0,072	0,804	-	-
Industry	0,008	0,789	-	-	-0,003	0,960	-	-	-0,019	0,610	-	-
Year	0,067	0,393	-	-	0,248	0,177	-	-	0,014	0,880	-	-
Country	**0,473**	0,014	**0,530**	0,003	0,355	0,311	**0,660**	0,038	0,442	0,115	0,454	0,056
N	90		90		30		30		60		60	
Adj. R^2	0,364		0,390		0,184		0,178		0,266		0,321	
Model F-value	7,379		19,936		1,819		3,094		3,666		10,305	
Model sig.	<0,001		<0,001		0,130		0,044		0,002		<0,001	

The table shows impact of board characteristics on IPO valuation on total sample as well as broken down in Main market and First North listings. The table reports correlation coefficients (β) and statistical significance. Correlation coefficients with statistical significance at 5 per cent have been bolded. Each sample has been run with two different models: (1) columns have been run with regression model including all the selected variables while (2) columns have been run with only the most significant variables identified in the previous analyses: BoardSize, LN(BV), and Country.

Out of the board characteristics included in our regression model, the only variable that we found to have statistically significant impact on IPO valuation is BoardSize. The variable was statistically significant at 5 per cent. The correlation coefficient is 0,134 indicating that increase in board size adds to the firm valuation. This is inconsistent with our hypothesis H1 which predicted smaller boards to impact valuations positively. Board independence correlated negatively with IPO valuation with coefficient correlation of negative -0,125. This is inconsistent with our hypothesis H2. However, our regression models failed to have statistically significant relationship with the dependent variable and therefore, we cannot conclude on the sign of correlation. Finally, we compared the impact of gender representation on the firm valuation. Similar to the independence measure, we failed to find statistically significant correlation with the firm valuation (p-value 0,441). The correlation between female directors and IPO valuation was positive consistent with our hypothesis. The positive relationship was especially more powerful with Main market listings (coefficient correlation of 1,563) compared to First North (0,140).

Further, we compared the regression analysis results between the Main market and First North listings. Model 1 was statistically significant at the First North sample (p-value 0,002) while at the Main market sample the model 1 was slightly above the threshold (p-value 0,130). However, when we ran the model 2 with less variables the model was significant also for Main market sample at p-value of 0,044. In model 2 we investigated the impact of Board Size on firm valuation. Based on the results the coefficient correlation was close between the Main market and First North samples (0,115 vs 0,116).

As an additional analysis, we ran the regression model separately by country and by year based on which country the company was listed. These analyses provide evidence over whether the country environment and timing affect the results. The results per country are presented in table 10 while results by year are in table 11. Based on the descriptive statistics that were presented in earlier section showed variances in the annual statistics, which indicates there have been changes in the board structures year over year. Therefore running the regression analysis by country and year might provide additional insights into the data and the relationship between board set up and IPO valuation.

In the country specific results, we can see that the coefficient for board size is similar in both countries. We note that the regression for Finland has p-value of 0,0567 and thus is slightly above the 5% threshold and needs to be rejected. This may be due to the lower sample size of Finnish IPOs (15 firm observations) compared to Sweden (75 firm observations). Based on the results we note that the board size has similar relationship both in the two countries.

Table 10 Regression analysis by country

	Finland		***Sweden***	
Variable	β	Sig.	β	Sig.
Model	*(1)*		*(1)*	
(Constant)	3,377	0,446	4,602	0,000
Independent variables				
BoardSize	0,101	0,559	0,139	0,048
BoardIndepenence	0,105	0,920	-0,225	0,686
FemDirectors	-0,719	0,750	0,582	0,348
Control variables				
LN(BV)	-0,184	0,343	-0,239	0,000
OP/BV	2,071	0,194	-0,132	0,637
Industry	0,034	0,781	0,002	0,941
Year	-0,024	0,927	0,125	0,181
N	15		75	
Adj. R^2	0,567		0,337	
Model F-value	3,620		6,381	
Model sig.	0,056		<0,001	

Table presents results of the regression model 1 run separately by country.

Next, we can analyse results by year which are presented in table 11. We see that year 2013 is not statistically significant with p-value at 0,337. This may be also driven by smaller sample size during the year (10 firm observations) and as such the results are less reliable compared to 2014 and 2015. In 2014 the results are clearly significant with p-value less 0,001. Year 2015 is again insignificant with p-value of 0,071. However, when we

compare the coefficients for board characteristics between 2014 and 2015 we see similarities between the year. Board size is positively correlated at 0,141 in 2014 and 0,137 in 2015. These results are consistent with the earlier analyses providing evidence over the correlation between board size and IPO valuation. However, the p-values for the variables are above the 5% threshold.

Table 11 Regression analysis by year

	2013		***2014***		***2015***	
Variable	β	Sig.	β	Sig.	β	Sig.
Model	*(1)*		*(1)*		*(1)*	
(Constant)	-0,139	0,981	5,377	0,000	4,094	0,001
Independent variables						
BoardSize	0,305	0,343	0,141	0,135	0,137	0,195
BoardIndepenence	-0,927	0,639	-0,337	0,622	-0,433	0,607
FemDirectors	0,146	0,943	0,559	0,501	1,116	0,250
Control variables						
LN(BV)	-0,037	0,897	-0,275	0,000	-0,204	0,005
OP/BV	-0,385	0,838	-0,119	0,700	-0,307	0,543
Industry	0,195	0,296	-0,006	0,872	-0,048	0,377
Country	0,198	0,720	0,367	0,226	0,695	0,057
N	10		32		44	
Adj. R^2	0,501		0,554		0,15	
Model F-value	2,292		6,502		2,084	
Model sig.	0,337		<0,001		0,071	

Table presents results of the regression model 1 run separately by country. Year 2012 was excluded as the sample size was 4 firm observations and as such likely to be too small to have statistical significance.

6. DISCUSSION

In this chapter, we discuss the results of this study and how our observations relate to and contribute to past research. In addition, we will discuss the limitations of the sample and research design of the study.

This study's focus was to investigate the relationship between board characteristics and firm valuation on IPOs. The descriptive statistics show that the structure of boards is relatively consistent across the sample and variance among the firm observations is small. However, we can see differences especially when comparing IPOs between the Main market and First North listings. We can also identify gradual movements in the structures of boards when analyzing the trends in time series. Meanwhile, in our regression analysis the only board characteristics that we found have significant correlation with IPO valuation was board size.

Board size

The median board size in the Main market listings amounted to 6,5 directors while the value at First North was 5 directors. Thus, the board sizes were larger in the Main market listed companies compared to First North listings. Also, we could the standard deviation was lowest in 2015 compared to the earlier year both in Main market and First North listings. This indicates that the convergence of board size has been increasing towards the endo of the sample periods between 2012-2015.

Next, it is interesting to compare the statistics of the board sizes in the listings to the past literature. The median value 6,5 in Main market and 5 directors at First North and thus the board sizes are relatively small. These observations are consistent with past papers that have indicated smaller board rooms increase firm's market value (e.g. Jensen 1993, Yermack 1996). As purpose of IPO is typically to maximize the firm valuation when shares are sold in the markets it is reasonable that management and the owners try to maximize the attractiveness of the firm towards investors. The median value of board size is slightly smaller than the preferred board size proposed by Lipton and Lorch (1992) and Jensen (1993) who suggested boards of 7-9 directors as optimal.

In our regression model board size was the only board characteristic variable where we found statistically significant correlation to the IPO valuation. The variable was statistically significant at 5 per cent. The correlation coefficient is 0,134 indicating that increase in board size adds to the firm valuation. This is inconsistent with our hypothesis H1 which predicted smaller boards to impact valuations positively. The different result on the direction of correlation compared to the hypothesis may be derive from the relatively small size of boards in the firm observations. Negative correlation between board size and firm value that has been reported in the past studies by e.g. Jensen (1993) and Yermack (1996) has been based on higher average board sizes. Jensen (1993) suggested boards of 7-8 directors as optimal. As such we can see that the median board sizes in the Finnish and Swedish firms were five directors. Thus, it is reasonable that the correlation to firm value is positive given the smaller base value on average in the sample.

Further, as an additional analysis, we compared the regression analysis results between the Main market and First North listings running the regression separately for the Main market and First North firms (refer to table 9). In the regression analysis we selected less variables taking only Board Size from the board characteristics and excluded other board related variables from the regression that been noted statistically insignificant. Based on the results the coefficient correlation of board size was close to the same value both in the Main market ($\beta = 0{,}115$) and First North samples ($\beta = 0{,}116$). These results enforce the assessment that board size positively correlates with the firm valuation and we can see that the relationship is consistent both in Main market and First North listings.

Board independence

Board independence (measured as the portion of independent directors relative to the total board size) was high close to 100% in the sample across the testing periods. We noted that the independence ratio was higher in the Main market listings (median 100%) compared to First North (83%) and the variance was higher in First North (std. dev 0,2) than in Main market (0,1). This indicates that there is more variation in First North listings and the board independence is not as dominant attribute in the Fist North listings compared to Main market firms. Also, we noted that that there was no clear pattern visible in the trend at First

North listings during 2012-2015 with the mean independence ratio fluctuating between 80% to 100%. Based on the statistics, there is more variation on the independence ratio in First North listings compared to Main market.

In the regression analysis, board independence correlated negatively with IPO valuation with coefficient correlation of negative -0,125. This is inconsistent with our hypothesis H2 predicting that board independence adds to the firm valuation. However, our regression models failed to have statistically significant relationship with the dependent variable and therefore, we cannot conclude on the sign of correlation. Theory and different studies in the academic research show that independence of board has been noted to correlate positively with firm performance (see Coles et al. 2008, Byrd et al. 1992, Cotter et al. 1997). However, there is mixed evidences of the correlation between independence and firm performance (Hermalin & Weisbach 1991, Bhagat & Black 2002). As such our results in this study support results of those past studies that have not found correlation between the board independence.

The lack of correlation between board independence and IPO valuation may be influenced by the high rate of independent members. The median value of board independence as shown in the descriptive statistics is 88%. As such this implies that since firms have adopted the principle to include mainly independent directors there is no significant impact on the regression analysis whether independent members account to 80% or 100% for example. Thus, the results of the regression analysis support the notion of convergence in the board independence practices in firms issuing IPO.

CEO-chairman duality

The statistics show that none of the sample firms had a CEO-chairman dual role. This clearly shows that companies in Finland and Sweden have implemented the corporate governance principle around separation of the CEO and chairman roles. This interesting as it may be expected that many firms that offer IPO will have a founder as a large shareholder and possibly with an active role in management of the company. Clearly, even if founder is in CEO position the firms and founders of these firms have adopted the principle to separate the roles.

Gender representation

Based on the descriptive statistics we noted that there is an upwards trend in the gender representation year over year at Main market with median portion of female directors growing from 10% in 2013 to 20% in 2015. At First North listings the trend was not visible as the highest median value was in 2013 with 20% compared to decreasing measures of 10% in 2014 and 0% in 2015. We failed to find statistically significant correlation between gender representation and IPO valuation (p-value 0,441). The correlation between female directors and IPO valuation was positive consistent with our hypothesis. The positive relationship was especially more powerful with Main market listings (coefficient correlation of 1,563) compared to First North (0,140). This is in line with findings by Post and Byron (2015) who found that female board membership correlated positively with market valuation in countries greater gender parity (such as Nordic countries).

Limitations of the study

This study provides data and analysis of correlation (and lack thereof) between board characteristics and IPO valuations in firm listings in Finland and Sweden between 2012-2105. There exist limitations over the empirical methods performed and interpretation of the results.

The first limitation pertains to the scope of the sample. This study includes four years of listings with total firm observations of 90 firms in the final sample. However, extending the sample to more years and countries may improve the reliability of the regression results.

Further, this study does not examine statistically the causal relationship between board characteristics and IPO valuation. The hypotheses and interpretation of correlations is based on past academic research. Thus, we have reasonable basis to assess the results of the regression analysis.

The empirical data provides an accurate and exhaustive overview of the IPOs in Finland and Sweden. The final sample represented 90 observations out of 112 total IPOs during the sample period, which amounts to 80% coverage. The trustworthiness of the data is ensured

by collecting the stock market data from Nasdaq and Orbis database, while the financial data and board information was collected from the prospectuses released by the companies.

7. CONCLUSIONS

7.1. Summary

The purpose of this thesis is to provide insights on how the characteristics of board affect valuation of entities offering an initial public offer. The agency theory portrays that the interests of company management and investors are in conflict by nature, which establishes distrust between the principal and the agent. Development of corporate governance has been proposed as a one of the most effective methods to certify the quality of the financial reporting and create trust in the market. As a company implements an effective corporate governance model it can be assumed that the trust towards the quality of financial reporting is improved among the market participants and the required rate of return decreases.

This study examines the impact of board characteristics on the pricing of Initial Public Offerings in Finland and Sweden during 2012-2015. By taking the two Nordic countries into the scope of the study we will have broad overview of the IPOs in the Nordics. This is especially interesting period as the IPO market has been very active during past years and therefore there is a broad sample of stock listings that will be examined in this study. Further, this study examines differences between the between the Regulated Market (Nasdaq Exchanges) and the less strict First North market place (Multilateral Trading Facility). This will provide comparison of characteristics of companies listing in the two market places.

The board characteristics for the study were selected based on the key drivers identified in the past literature that influence board's ability to function and are associated with good governance practices creating trust towards investors. The selected board characteristics to be studied were board size, board independence, CEO-chairman duality, and gender representation.

The empirical part of this study was conducted with initial public offerings made in Finland and Sweden during 2012-2015. The data includes both firms listed in the main stock exchanges Nasdaq Helsinki and Nasqad Stockholm as well as the less regulated First

North exchanges in Helsinki and Stockholm. We excluded financial companies as they operate in a more regulated environment compared to non-financial companies.

The results of the study show that the structure of boards is relatively consistent across the sample and variance among the firm observations is small. However, we can see differences especially when comparing IPOs between the Main market and First North listings. Also, we can identify gradual movements in the structures of boards when analyzing the trends in time series. Meanwhile, in our regression analysis the only board characteristic that we found have significant correlation with IPO valuation was board size.

The median value of board size was slightly smaller than the preferred board size proposed in earlier research (e.g. Lipton and Lorch (1992) and Jensen (1993) who suggested boards of 7-9 directors as optimal). The board size correlated positively with IPO valuation which was inconsistent with our hypothesis. The result on the different direction of correlation compared to the hypothesis may relate to the smaller board sizes observed in the sample relative to results seen in the past research. Earlier research suggested boards of 7-8 directors as optimal. We can see that the median board sizes in the Finnish and Swedish firms were five directors and, thus, it is reasonable that the correlation to firm value is positive given the smaller base value on average in the sample.

Board independence (measured as the portion of independent directors relative to the total board size) was high close to 100% in the sample across the testing periods. We noted that the independence ratio was higher in the Main market listings (median 100%) compared to First North (83%). There was more variation in board independence in First North listings compared to Main market firms.

In the regression analysis, we did not find statistically significant correlation between board independence and IPO valuation. The lack of correlation may derive from the high rate of independent members implying that since firms in general have adopted the high independence rate in board nominations there is no significant variation among firm and consequently little impact on the IPO valuation. Thus, the results of the regression analysis support the notion of convergence in the board independence practices in firms issuing IPO.

The statistics show that none of the sample firms had a CEO-chairman dual role. This clearly shows that companies in Finland and Sweden have implemented the corporate governance principle around separation of the CEO and chairman roles. Clearly, even if founder is in CEO position the firms have nevertheless adopted the principle to separate the roles.

Finally, our last board characteristic in focus was gender representation in boards. Based on the descriptive statistics we noted that there is an upwards trend in the gender representation year over year at Main market while at First North listings the trend was not visible. We did not see statistically significant correlation between gender representation and IPO valuation.

The results contribute to the previous literature by showing the relationship between board structures and firm value. The results found correlation between board size and IPO valuation while other attributes (board independence and gender representation) were not found to have significant correlation with firm value. Also, we found that the CEO and board chairman roles have been separated in all the firms listing during 2012-2015. This indicates the adoption of the corporate governance principle to separate the two roles.

7.2. Further research

The study leaves some questions to be considered for the future. First, the study covered only two countries and 4 years of IPOs. Another study with extending the time horizon and number of countries may have more exhaustive sample. This could lead to more comprehensive results and analysis of the relationships between the variables.

Future research could extend the variables to be investigated by looking into additional attributes of board effectiveness. For instance, we saw that board independence and CEO-chairman dual role seemed not to have significant impact. There was high convergence of the practices on board independence. Therefore, selecting alternative variables may bring insights into the key determinants of board characteristics that influence investor behavior and valuation of firms.

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